CC Docket No 99-68

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June 1st, 1999

The Honorable Chairman William Kennard
Chairman Federal Communications Commission

Dear Chairman Kennard,

The FCC is correct in the February 25, 1999 Declaratory Ruling classifying Internet Traffic as "Jurisdictionally mixed" but is incorrect in its further assumption that the traffic "appears to be **largely** Interstate." for an increasingly large number of ISPs both foreign and domestic.

Most simply ask, who cares how or why any of this communication traffic is classified as local or between states?

SOME BACKGROUND

It matters in that if the communications are local in nature, communication time is subject to payment agreements telephone companies currently have and have had in effect for decades. Now that it has been decided by the FCC that the communication between a local dial-up Internet user, the ISP, the local phone company and the Internet has Jurisdictionally mixed and largely Interstate communication traffic, RBOCs have refused to make payments for local traffic transition from the RBOCs customer to the CLEC switch. In effect increasing the costs for CLECs to switch traffic to the ISPs.

We need to revisit the FCC's decision making process and parse that decision against the current and future state of the Internet.

The reciprocal compensation debates between large and powerful Regional Bell Operating Companies, or RBOCs, that were late to the Internet party, and Competitive Local Exchange Carriers are showing renewed signs of a pitched battle with the new upstarts. The RBOCs now are complaining about the new CLECs serving lower cost and more advanced local telecommunications lines to Internet Service Providers and the resulting payment for handling and switching the local traffic from the RBOCs customers who want to access the ISPs site. Federal and State regulators are leaning towards the lobbyists mantra with the latest decision from the FCC.

The regional bell operating companies have well polished lobbying groups in all states and have particularly well groomed lobbying staffs touring everyone they can possibly influence. They are doing this with hopes to influence those politicians and law makers to deny the reciprocal compensation payments that these new competitive local exchange carriers are earning from the regional bell operating companies. CLECs have been installing hundreds of millions of dollars of telephony switches and other advanced electronic gear all in the hopes of advancing the state of telephone and data connections for the masses, including the Internet Service Providers. The CLECs also seem to want to

serve the end user more quickly and with more reasonably priced services than the monopolistically entrenched RBOCs.

OVERVIEW

The FCC in arriving at this conclusion, based its' decision on information that was presented by industry participants up to 48 months prior to the February 25, 1999 Declaratory Ruling in CC Docket 96-98 and Notice of Proposed Rulemaking in CC Docket 99-68.

The Internet Network used to be a network without significant local data storage capabilities or hardware and software that could redirect information requests. Telecommunications would occur during each request a local user needed information contained in a distant or remote Internet connected server. This is a fundamental view held today of what the Internet is, namely a wide web of interconnected computer servers domestically and globally. This view is now altered only to add that millions more users are now connected to the Internet than there are server sites. Servers used to outnumber users. Now users far outnumber servers. Many Internet users now transit to and view the same web sites or view the same UseNet news, or watch the same streaming video or audio as other Internet connected users.

While Telecommunications happens to some extent, telecommunications, like servers, is not the dominate portion of total traffic now and as we move to the future.

As the 1996 Telecom Act defines Telecommunications as " the transmission, between or among points specified by the user, information of the user's choosing, without change in the form or content of the information as sent and received." 47 U.S.C. 153(43).

In conjunction with the above, the Incumbent LEC carriers contend, "telecommunications" terminate not at the ISP's local server, but at the Internet site accessed by the end user, in which case these are interstate calls for which, they argue, no reciprocal compensation is due.

Further in the BellSouth MemoryCall example, "the commission considered the jurisdictional nature of traffic that consisted of an incoming interstate transmission (call) to the switch serving a voice mail subscriber and an intrastate transmission of that message from that switch to the voice mail apparatus.(7 FCC Rcd 1619) The commission determined that the entire transmission constituted an interstate call, because " there is a continuous path of communications across state lines between the call and the voice mail service."

ENTER NEW TECHNOLOGY: CACHING – ala 1999 and beyond.

Bandwidth is a costly Network connection. No matter how ones Internet service connects to the Internet, i.e. through a private network connected at either public or private peering

points or buying connectivity through Tier 1 Internet suppliers such as Sprint, AT&T, BBN(GTE), UUNet, it is a *costly* connection.

To reduce the cost of each user making a local request for data, then having that request transition onto the Net to some remote destination, look up the information on the remote server, then send it back to the original user/requestor, ISPs, CLECs even Backbone Network providers are using new Caching architectures to conserve that precious commodity, Network Backbone. User number one requests material that is present on the ESPN site, user number two through two-hundred request the same information. User two through two-hundred are only a local request and do not transition to the Internet. Now ISPs, CLECs and Backbone Network providers "***save***" the information locally. And in some cases user number one does not transition onto the Internet, as explained later.

These Caching architectures are fairly new to the Net, and most did not exist during the comment period or era that caused the FCC to render the February 25, 1999 FCC decision in Docket 96-98. Its not the FCC's fault, it just that Internet time has now passed them by – as it does to most of us.

It is amazing that most people go to the same places on the Net. ABC News, CBS News, CNN, MSNBC, the weather places, the sports places, and on and on. ISPs, CLECs and Backbone providers have found that saving the data locally with the cost of local disc storage, e.g.18 Gigabyte disc hovering at around five-hundred dollars, is a far cheaper (and getting less expensive) method of storage (Caching) than having to access the same site using duplicated Internet backbone transmissions and moving the same data across the Internet two-thousand times with the same information content for those users who are currently requesting the same information from a provider. A better idea would be to possibly access it once – "Interstate," save it on local cheap disc storage and serve up the information "Intrastate" or locally to the other additional end users. This methodology of **Caching locally** is far less expensive than buying Internet bandwidth for each and every local user request to go to a remote Internet site and pull the same information that two-thousand other on-line users are going to pull in the next twenty minutes.

Adding Bandwidth is not a viable long term solution. Bandwidth to date has not kept up with the growing user requirements. It has lagged. That is why most ISPs are becoming users of Caching. Adding Bandwidth without Caching just moves the data bottleneck to the remote servers or remote router interconnection points. With High-Speed Cable modems and Telco DSL services rolling out, the Backbones of the Internet are just not big enough. The increase in speeds will bury the Internet. That is why Caching will become omnipresent and ubiquitous at every ISP, every CLEC, and every Internet Backbone provider.

The average speed of the Net for Web Page download or view is 44Kbps. What happens now at 44Kbps, will have to happen at 1Mbps or faster. In each one minute period, the high-speed user can hop to 15 different sites in the same time increment that a slow speed

user can connect to one site. Caching will help solve this current and future strain on Network Bandwidth.

All content can be cached. The graphic parts of content, like logos, design borders, colors and flashy graphics, the "look" of the sites are all being Cached. This is called "Evergreen" Caching. Content that does not change as well as the changing content is cached. Sites that do not allow long Cache time, now allow and will be allowing heavy use of "Evergreen" caching to reduce remote server loading as this is much to the remote sites benefit.

UseNet news can and is all cached. Streaming Video and Audio is increasingly being Cached. All the web pages and forms for e-commerce can be cached, with just the character data, the characters you type, being moved to the remote server. This is now increasingly happening daily everywhere on Earth. Caching will continue to increase because of the cost factors involved with Net Bandwidth and the rapid decrease in large "local" storage disc RAID arrays and transparent proxying. Not good news for all those companies putting hundreds of fiber strands in the ground to serve up endless bandwidth requests.

The rate of growth of connected Internet content bandwidth and local content Internet bandwidth are changing fundamentally.

Typical Web Caching is done by various players such as Inktomi, Squid, Network Appliance, SkyCache and CacheFlow to name a few. Each one of these caching solutions offers the ability to store Internet Content at the "**Edge**" of the Network, rather than at the core of the Network, hence decreasing bandwidth bottlenecks by distributing the information outwardly. Secondarily, this makes the majority of traffic served up by the ISP – Local traffic, Intrastate traffic.

It is the Incumbent Local Exchanges Carriers customer that wants the data service from a competitive carriers customer. If the Incumbent LEC does not want to pay for their customers connecting to another carriers customers network, the LEC should compete for that other carriers customer network as the 1996 Telecom act intended, to increase competition – and lower prices to consumers. ISPs would most likely drop the cost of dial-up connections to consumers if the lines serving the ISP were supplied less expensively from the ILEC. If the Incumbent provides the best value, that LEC will have most if not all the carriers customers and reciprocal compensation becomes a non-issue and would not apply. In most instances, the cost of the dial lines from the ILEC amounts to more than 50% of the monthly charge to consumers for their dial-in access.

Now, with the background we have in Caching, namely that "**Internet content is increasingly stored at the "edge" of the Network**," we must look back at the decision concluded in FCC 96-98 issued February 25th, 1999.

" 12. Consistent with these precedents, we conclude, as explained further below, that the communications at issue here do not terminate at the ISP's local server, as CLECs and

ISPs contend, but continue to the ultimate destination or destinations, specifically at a Internet website that is often located in another state." This is what the FCC stated, based upon the information that they had at that time, which was up to four years old. As we now know, that possibly traffic is downloaded once from an Interstate or Intrastate location, can and is served up locally, many, many times to different and independent users. Possibly two-thousand or ten-thousand more times locally depending on the sites popularity. This adds to the classification of the Internet becoming a hybrid cross between Telecommunications and/or a Broadcast medium.

Remember the phrase earlier: - "Telecommunications is the transmission between or among points specified by the user, information of the user's choosing, without change in the form or content of the information as sent and received." I maintain the "among points specified by the user" has been altered by the ISP, without the users knowledge, using transparent proxy servers, Cache Servers, layer 4 switches and redirectors, that "the point" has been altered for the next 1000 users to be a "local" point of transaction, not an Interstate point of transaction. Those users are directed internally within the ISPs network. Thus, this traffic now does not become an Interstate telecommunications transmission.

I conclude that the FCC acted with outdated information, trying to do their best in attempting to put a lasso around the Internet. Caching is really changing the layout of the Net and will contribute to greater and greater change than anyone realizes now. Caching servers, transparent proxy servers and layer 4 redirection, automatically change the "users" point specified by him, thus not classifying the exchanges as telecommunications, but as what it is, a local call which does not go out over Interstate Backbone connections.

The same is true for Internet service provided by ADSL or any xDSL service hard wired to an ILEC or CLEC termination point. The point of interconnection for data transmission is through the ISP, ILEC or CLEC furnishing the data connectivity. So if greater than fifty-percent of the information requested over the xDSL lines is from local data storage - "Cache," then traffic is mostly local. CLECs and ISPs can use simple methods to total traffic that is "Local" versus traffic that goes out over the Internet Backbone, possibly transiting over state lines. However, without the xDSL traffic transiting through a telephone switch from an intermachine trunk delivered from an Incumbent LEC, this traffic is not subject to reciprocal compensation.

One last point needs to be made in the above conclusion. Usenet news as received by SkyCache or other packet based transmission methods is not telecommunications, nor is Web Content as received by SkyCache or other packet based transmissions methods. The user has no choice in what is to be Cached locally with these and others services. The user is not choosing the "end points to connect to" thus does not meet the classification of Telecommunications. The same case is true with iBeam, one of the companies that caches streaming video and audio. Since the user does not have a choice of what is Cached, those services are not deemed "Telecommunications", more correctly stated as Broadcast data stored locally and served locally, not over Interstate lines.

RECAPPING THE FCC POSITION

1996 Telecom Act defines Telecommunications as " the transmission, between or among points specified by the user, information of the user's choosing, without change in the form or content of the information as sent and received." 47 U.S.C. 153(43).

> We now know that the ***users point*** of the assumed specified origin of data ***has been changed***. Changed to a local point of interconnection. Changed so that any further attempts to page view or download that data ***are done so locally***. Not transiting the external Internet. Not going out-of-state. If a refresh is needed to Cache, it is directed to be done without user interaction or intervention. Whomever loads data later, the content is local, current and fresh.

The FCC commented additionally, "Consistent with these precedents, we conclude, as explained further below, that the communications at issue here do not terminate at the ISP's local server, as CLECs and ISPs contend, but continue to the ultimate destination or destinations, specifically at a Internet website that is often located in another state."

> Using what we know about Caching, this might be true for the first request, but is ***not true*** for other follow-on requests for that web page. ***This was the state of the Net three and four years ago***, but it is rapidly becoming not true today.

The commission determined that the entire transmission constituted an interstate call, because " there is a continuous path of communications across state lines between the call."

> We now know that there is ***not*** a continuous path of communications across state lines for a majority of calls or transmissions. Possibly only the first time a user requests page could it be a continuous path. All further page views are local or Intrastate in nature due to redirection to ***a new local source of data*** because of altered packet location headers.

"As discussed above, the Commission analyzes the totality of the communication when determining the jurisdictional nature of a communication."

> We assume that if the local traffic is 100Gbytes daily and assume that if Interstate data requests that are correctly classified as "Telecommunications" amount to 10Gbytes daily, that we ***then can conclude that the traffic is 90% local and 10% Interstate or Intrastate.***

Incumbent LEC carriers contend, "telecommunications" terminate not at the ISP's local server, but at the Internet site accessed by the end user, in which case these are interstate calls."

> The first attempt to load a web page could be under Interstate classification. But we know that the later attempts to load that page are not Interstate, but Intrastate or local in nature. With services such as SkyCache, even the first attempt is local, as SkyCache is forward looking and anticipates the general content that the majority of people are looking for, prior to users requesting that content.

So in the final analysis, ***all the facts*** that the FCC used to determine Jurisdiction of whether Intrastate or Interstate traffic applied have been altered by Caching – the changing Internet Paradigm.

WHAT HAPPENS NOW?

The state PUC commissions must be informed as to the current state of the Internet as the FCC did not know of Caching as it exists now. It is up to the CLECs and ISPs to do the education so that informed decisions can be made at the state level. Hopefully the re-education process will be taken to the FCC and they will not conclude incorrectly in the Notice for Proposed Rulemaking in CC Docket 99-68, that the traffic poised by ISPs is more Interstate than Intrastate in nature. As we can see from the real-world Internet view in 1999 with Caching, the traffic is lopsided to an Intrastate local classification.

Thank you.

Sincerely,

Cleve Tooker
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Inter@ctive Week 4/9/99

MSNBC Cashes In On Server Cache

By Steven Vonder Haar

Call John Nicol a contrarian.

On a Web where most publishers race to add more servers to handle growing waves of user traffic, Nicol has been challenging his technical development staff at MSNBC to get rid of some of the computers serving up content to site visitors.

That's no small task when traffic is increasing at a 10 percent monthly clip, as is the case at MSNBC. But trimming the fat from the site's server farm is a priority for Nicol, general manager of MSNBC on the Internet, who sees a chance to pump up his unit's financial results simply by becoming smarter about how the site serves its content.

Nicol says: "We were growing so rapidly, our server costs were going through the roof." He estimates that servers chew up more than half of his operating budget. "If the service was getting slow, we'd add another server. If [Monica] Lewinsky was expected to say something big this weekend, we'd add another five servers."

But what Nicol and MSNBC have discovered in recent months is that cache can turn into cash. By using cache -- the memory buffers that can store timeless content at remote sites sprinkled across the Web -- site operators can limit the drain on their central servers that can happen when users click to request new Web pages.

MSNBC's server diet has gone so well that Nicol this year was able to trim the number of servers used to dish out the site's content from 70 to 60 computers -- and expects to have enough capacity to meet the site's growth through at least the end of the year.

It's all made possible by a series of large and small changes that together add up to big savings in terms of the amount of data MSNBC's servers have to serve up on a given day.

As a news site, for instance, MSNBC used to have strict rules on how long Internet service providers could store MSNBC content at their local cache.

Access providers generally use cache systems to store popular Web sites locally, allowing them to serve pages quickly from their own computers without repeatedly having to pull the same data from the publisher's server.

MSNBC, seeking to provide continuous, fresh news updates, typically has allowed publishers to hold its Web site in cache for only short periods. That means access providers would have to repeatedly request data updates from MSNBC servers throughout the day.

To lighten the load, MSNBC has begun to define some "evergreen" elements of its design template, such as its logo, that can remain in remote cache for months at a time, Nicol says. While news stories still are regularly updated, MSNBC servers no longer are bogged down sending the data needed to draw the site's logo every time a user visits.

MSNBC also is using cache within its own server farm to streamline the way it delivers data. "Don't connect to anything you can cache," Nicol says.

Take stock quotes, for instance. Previously, MSNBC handled each request by individually retrieving the stock quote from its data provider. Now, price quotes for popular stocks are stored in MSNBC servers, which can retrieve and store price up-dates on a minute-by-minute basis.

The process enables MSNBC to serve the same stock quote to hundreds of users at peak times, without using the bandwidth and computing resources that previously were needed to retrieve the information for each request.

The changes, along with more judicious use of its databases, have helped MSNBC (www.msnbc.com) cut its monthly server cost by at least 20 percent -- savings that can help bloated budgets move back in line. "We've really gotten religion on our need to manage caching," Nicol says.

At Home Builds Local Access Speed Bumps

Service cuts upstream bandwidth, citing user abuses

For some subscribers to At Home's @Home cable modem service, the on-ramp for high-speed access now looks more like a speed trap than a superhighway.

In March, At Home (www.home.net) unilaterally implemented a new acceptable-use policy for the residential @Home service. The policy cut the speed of user upstream access from 750 kilobits per second to 128 Kbps, or a little more than twice the speed of dial-up rates.

The change has some users crying foul. "My uploading times for a 1-megabyte file went from 8 [seconds] or 10 seconds in the fall to 75 seconds now," says Charles Conte, a marketing communications writer and @Home customer from Nashville, Tenn. "They say they had to do this to curb abuses, but it isn't fair. Just because a few people are driving 75 miles per hour in a 55-mph zone, they've dropped the speed limit to 30 mph."

Watch your speed

At Home says it had to ratchet down upstream speeds to ensure that it can keep service up and running for all subscribers. "We're performing network management to scale the backbone and ensure that customers get the quality of service that they have come to expect," says Matt Wolfrom, an At Home spokesman.

Because cable modem services such as @Home are based on a shared-access network, subscribers who use the network for big file transfers or other applications requiring heavy use of upstream capacity could cause service to deteriorate for other subscribers.

Customers have found a plethora of ways to abuse the network, Wolfrom says, including setting up File Transfer Protocol servers, mass e-mail businesses and gaming. In a few cases, @Home subscribers actually have set themselves up as Internet service providers using the company's high-speed access pipes.

"We've got people reselling our bandwidth to consumers as a dial-up service," Wolfrom says.

While analysts agree that abuses are going on, they also say that downgrading service may not be the best defense.

"The providers are having second thoughts about their services because they don't like it that their customers have figured out new things to do with the bandwidth," says Gary Arlen, an independent industry analyst. "At Home doesn't want to let people do this without getting a piece of the market. All the customers shouldn't be penalized for the actions of a few."

Arlen suggests At Home may be trying to push certain high-usage customers to its more expensive @Work service, a motive Wolfrom dismisses.

"We have designed an always-on service [with @Home]," Wolfrom says. "We want people to use it as much as possible. What we don't want is certain users to be hogging bandwidth and making the service less robust for other people. This is a residential service, and we feel it still addresses residential needs."

Conte says At Home representatives have told him that the @Home residential service wasn't made for customers like him — he uses it to upload large files several times per day.

"They would say these insulting things like, 'If you're having a problem, maybe you're not using it according to the rules,' " Conte says.

At Home is considering new service options to bridge the gap between @Home and @Work, Wolfrom says. The service could serve customers who require faster upstream connections than @Home currently provides but who don't need @Work's 10-megabit-per-second access. At Home also is looking at providing multiple tiers of service instead of a single service level. ▲

At a Glance: Trickle upstream

- **Issue:** At Home has lowered the upstream, return path bandwidth available to @Home service users from 750 kilobits per second to 128 Kbps.
- **Problem:** At Home says the move was forced by subscribers who are violating usage terms.
- **What At Home Says:** "We've got people using our bandwidth, reselling it to consumers as a dial-up service."
- **What Subscribers Say:** "Just because a few people are driving 75 miles per hour in a 55-mph zone, they've dropped the speed limit to 30 mph."
- **What Analysts Say:** "The providers are having second thoughts about their services because they don't like it that their customers have figured out new things to do with the bandwidth."

Net use isn't long distance

I was intrigued by the article in the Mail Tribune about the increasing congestion on phone lines caused by Internet users. Some users apparently stay on the line for four or five hours a day and a few even remain online constantly to have access available whenever they need it. The resulting delays in connection times have forced phone company to add phone lines. My question concerns the costs of such phone service. Do Internet users pay the same long-distance rates that we phone users pay, or are they subsidized in some way by our rates? Either those whose modems are always connected have phone bills that would make even Bill Gates blanch, or else they're not paying their fair share.

— Don V., Ashland

That's the beauty of the Internet, Don: Being online isn't a long distance call, it's a local one.

That's because the information sent over the Internet doesn't spend much time going over phone networks but rather data ones, according to InternetCDS manager Jaye Mathisen.

"The only part of it that goes over the telephone network is the call to the local provider," says Mathisen.

Internet providers connect to data networks and pay a flat fee for that connection. They pass that fee on to users. Data networks don't charge time-based rates like phone networks do.

"That's the beauty of data networks," Mathisen says.

Technically, data and voice could be carried on the same network and are in some cases. But the billing is based on those flat connection rates for Internet connections, while traditional long-distance calls are still billed minute-by-minute.

So, because the call is only a local one for Internet users, they can communicate with people in Budapest or anywhere else for free — as long as their local billing plan allows for unlimited use.

And, because the long-distance companies aren't in the loop, the money they are charging you isn't subsidizing Internet users.

Send your questions to "Since You Asked," Mail Tribune Newsroom, P.O. Box 1108, Medford, OR 97501; or by fax to (541) 776-4376; or by e-mail to: youasked@mailtribune.com

Please include your name, address